

## ABSTRACT

A method for producing an SOI wafer by the hydrogen ion delamination method comprising at least a step of bonding a base wafer and a bond wafer having a micro bubble layer formed by gas ion implantation and a step of delaminating a wafer having an SOI layer at the micro bubble layer as a border, wherein, after the delamination step, the wafer having an SOI layer is subjected to a two-stage heat treatment in an atmosphere containing hydrogen or argon utilizing a rapid heating/rapid cooling apparatus (RTA) and a batch processing type furnace. Preferably, the heat treatment by the RTA apparatus is performed first. Surface roughness of an SOI layer surface delaminated by the hydrogen ion delamination method is improved over the range from short period to long period, and SOI wafers free from generation of pits due to COPs in SOI layers are efficiently produced with high throughput.